DOCUMENT RESUME

ED 031 715 CG 003 991

By-D'Costa, Ayres

The Development of the Ohio Vocational Interest Survey.

American Vocational Association, Washington, D.C.
Pub Date Dec 68
Note-10p.; Paper presented by Ayres D'Costa, Ph.D., at the National Conference of the American Vocational Association at Dallas, Texas, December, 1968.
EDRS Price MF-$0.25 HC-$0.60
Descriptors-Cluster Grouping, Decision Making Skills, *Interest Scales, *Measurement, Occupational Choice, Occupational Information, Occupational Surveys, *Occupations, Rating Scales, *Vocational Counseling, *Vocational Interests

Each major cluster formed by the worker trait groups in the Third Edition (1965) of the Dictionary of Occupational Titles (DOT), was used to define an interest scale for the Ohio Vocational Interest Survey (OVIS). The OVIS scales regrouped the nine levels described by the DOT for the data, people, and things dimensions of work into three levels--low, average, and high. The OVIS and DOT relationships are grouped into cubes and subdivided into cells. The OVIS items are brief statements of activities in the cluster of jobs representing an OVIS scale. The reliability is high and the items are valid to the extent that the DOT listings are valid. Norms differ slightly for males and females. The OVIS is adaptable to a computerized system of vocational information based on the DOT and designed to teach decision-making and to facilitate vocational exploration. (Author/EK)

ED031715

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

CG 003991

THE DEVELOPMENT OF THE OHIO VOCATIONAL INTEREST SURVEY

A paper delivered by Ayres D'Costa, Ph.D., at the National Conference of the American Vocational Association at Dallas, Texas, December, 1968.

Vocational development theorists (Super, 1953; Ginzberg et. al. 1951) suggest that a career is formed through certain life stages that range from an early fantasy exploration of self, through a more realistic identity-seeking, to a final stage of stability and maturity. In keeping with the learning process described by Piaget (Hunt, 1961) and the development theory put forth by Erickson (1963), earlier stages are critical in the development of subsequent stages.

The process of growth appears to be an interaction of what one can do and what one would like to do. Opportunity and ability interact with interests and values. Cooley (1967) found that Project TALENT youth appeared to become interested in what they did well, and to learn to do well what they liked to do. This kind of adjustment seems to be at the heart of vocational development. It is an individual-centered process that depends upon understandings of oneself and one's environment. Guidance theorists have had this in their three-step formula: understand yourself, understand the world of work, learn to make wise choices. Super et. al. (1963) define this as the process by which the individual finds himself and his role in life, that is, the development of his self-concept.

Understanding the world of work is contingent upon the availability of good occupational information. Since the individual must apply the characteristics of the world of work to what he knows about himself, it is important that the world of work be described in terms that make this application easy.

The Third Edition of the Dictionary of Occupational Titles (1965), (DOT) was designed with this goal in mind. The six-digit code classifies

each job in person-related terms, specifying the activity performed and the psychological characteristics implied in it, rather than in terms of managerial or industrial labels. (Figure 1) These six digits indicate a) what the worker does and b) the kind of personality characteristics that a typical worker has. The activity performed is specified by the three digits to the left of the decimal point in terms of general CATEGORIES, which in turn are subdivided into DIVISIONS, which are further subdivided into GROUPS. Thus, 202 indicates the group for secretaries - taking and transcribing dictation, who belong to the division for stenography, typing, filing and related work, which in turn belongs to the general category for clerical and sales occupations. The three digits to the right of the decimal point indicate the psychological implications of the job. They indicate its level of involvement with data, with people, and with things.

Figure 1

DOT Job Classification Code

Category	Division	Group		Data	People	Things
2	0	2	.	3	8	8

Occupational analysts of the U.S. Department of Labor (1967) believe that data, people, and things are the basic elements of involvement in any job. The writings of E. L. Thorndike (1921) support this claim because he suggested that intelligence or human behavior can be classified as abstract, social, or mechanical. It is easy to note the relationship of abstract intelligence to the use of data or ideas in work, of social intelligence to one's adroitness in relating to people, and of mechanical intelligence to one's ability to manipulate things.

If data, people, and things are the basic dimensions of work, the world of work can be considered as a three-dimensioned space or roughly a cube (D'Costa and Winefordner, 1968). Jobs which are described in terms of data, people, things values can be plotted so as to occupy a unique spot in the cube. Since data, people, things values have become available through functional job analysis and are provided in the DOT for all jobs, it is possible to plot all these jobs in this cube.

When the 114 worker trait groups, which represent the entire world of work, were plotted in the data-people-things cube, they formed into clusters which were found to be homogeneous not only in terms of their data, people, things values but also in terms of other characteristics, such as interests, temperaments, aptitudes, and general educational level. It was hypothesized that these clusters represent the world of work and could, therefore, be used to survey vocational interests. Each major cluster was used to define an interest scale for the Ohio Vocational Interest Survey (1968). (OVIS). Each OVIS scale represents a cluster of worker trait groups. Twenty-four major clusters were identified and have been carefully translated into interest scales for OVIS. These scales are listed and described below:

1. Manual - Unskilled use of tools and routine work done by hand.
2. Machine - Operating and adjusting machines used in processing or manufacturing.
3. Personal Service - Providing routine services for people as a waiter, waitress, usher, household worker, etc.
4. Caring for People or Animals - Routine work related to the day-to-day needs of people or animals.
5. Clerical - Typing, recording, filing, and other clerical or stenographic work.
6. Inspecting and Testing - Sorting, measuring, or checking products and materials; inspecting public facilities.
7. Crafts and Precise Operations - Skilled use of tools or other equipment as in the building trades, machine installation and repair, or the operation of trains, planes, or ships.
8. Customer Service - Conducting business relations with people as in retail selling, accepting reservations, receiving payments, or providing information.
9. Nursing and Related Technical Services - Providing services as a nurse, physical therapist, X-ray or medical laboratory technician, or dental hygienist.

10. Skilled Personal Service - Providing skilled services to people such as tailoring, cooking, barbering, or hairdressing.
11. Training - Instructing people in employment or leisure-time activities. Also includes animal training.
12. Abstract-Verbal - Writing novels, poetry, reviews, speeches or technical reports; editing, or translating.
13. Abstract Numerical - Using mathematics as in accounting, finance data-processing, or statistics.
14. Appraisal - Determining the efficiency of industrial plants and businesses, evaluating real estate, surveying land, or chemical and other laboratory testing.
15. Agriculture - Farming, forestry, landscaping, or the related fields of botany and zoology.
16. Applied Technology - Application of engineering principles and scientific knowledge to the design of structures and machines.
17. Promotion and Communication - Advertising, publicity, radio announcing, journalism, news information service, interviewing, recruiting; also providing legal services as a judge or lawyer.
18. Management and Supervision - Administrative or supervisory positions, such as a shop foreman, supervisor, school administrator, police or fire chief, head librarian, executive, hotel manager, or union official. Includes owning or managing a store or business.
19. Artistic Decoration - Interior decorating, display work, photography, commercial and creative art work, or art restoration.
20. Sales Representative - Demonstrating and providing technical explanations of products or services to customers, selling and installing such products or services, and providing related technical assistance.
21. Music - Composing, arranging, conducting, singing, or playing instruments.
22. Entertainment and Performing Arts - Entertaining others by participating in dramatics, dancing, comedy routines, or acrobatics.
23. Teaching, Counseling, and Social Work - Providing instruction or other services to schools, colleges, churches, clinics, or welfare agencies. Includes instruction in art, music, ballet, or athletics.
24. Medical - Providing medical, surgical, or related services for the treatment of people or animals.

It is useful to understand the relationships among the OVIS scales by comparing their respective data-people-things values. To facilitate this, OVIS regrouped the nine levels described by the DOT for the data, people, things dimensions of work. (Figure 2). OVIS uses three levels — high, average, low — for each dimension and represents them by numbers 2, 1, 0 respectively. The regrouping of the nine levels into three levels took into account the location of the clusters in the cube as well as the logical meaningfulness of the new groups.

Figure 2

OVIS-D.O.T. RELATIONSHIPS

Level of Involvement	OVIS Rating	D.O.T. Rating	DATA Functions	D.O.T. Rating	PEOPLE Functions	D.O.T. Rating	THINGS Functions
High	2	0 1 2	Synthesizing Coordinating Analyzing	0 1 2 3 4	Mentoring Negotiating Instructing Supervising Diverting	0 1 2 3	Setting-Up Precision Working Operating-Controlling Driving-Operating
Average	1	3 4 5 6	Compiling Computing Copying Comparing	6 7	Persuading Speaking-Signalling Serving	4 5 6 7	Manipulating Tending Feeding-Offbearing Handling
Low	0	7 8	No Significant Relationship	8	No Significant Relationship	8	No Significant Relationship

The cube is thus subdivided into 3x3x3 or 27 cells. (Figure 3). Each cell can be described in terms of its level of involvement with data, with people, and with things. (Figure 4). Cell (0,0,0) has low to no involvement with data, with people, and with things. When the jobs were plotted in the cube, no job was found in cell (0,0,0). Cell (0,0,1) has low to no involvement with data and with people, but has a 1 or average involvement with things. This cell had a cluster of jobs which appeared to be of the "manual" kind. Thus cell (0,0,1) is the location for OVIS scale 1-Manual work. Similarly, cell (1,0,2) has 1 or average involvement with data, no involvement with people, and '2' or high with things. This cell is the location for OVIS scale 7, Crafts and precision operations. Note that cells (0,2,0); (0,2,1); (0,1,2) etc. are not represented by any OVIS scales. This is because no jobs in the DOT fell within these cells. There appears to be a logical explanation for this phenomenon. Cell (0,0,0) for instance, is empty probably because useful work cannot be done without involving either data or people or things. Cell (0,2,0) is probably empty because it is inconceivable that high level work can be done with people without using data or things. Similar explanations might be given for the other empty cells.

Figure 3

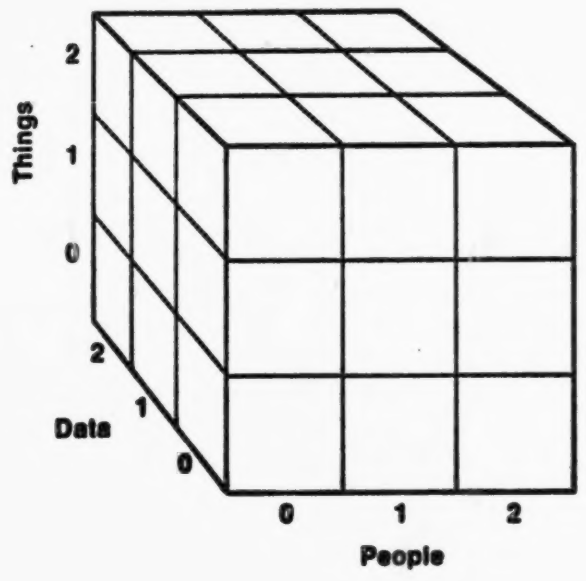
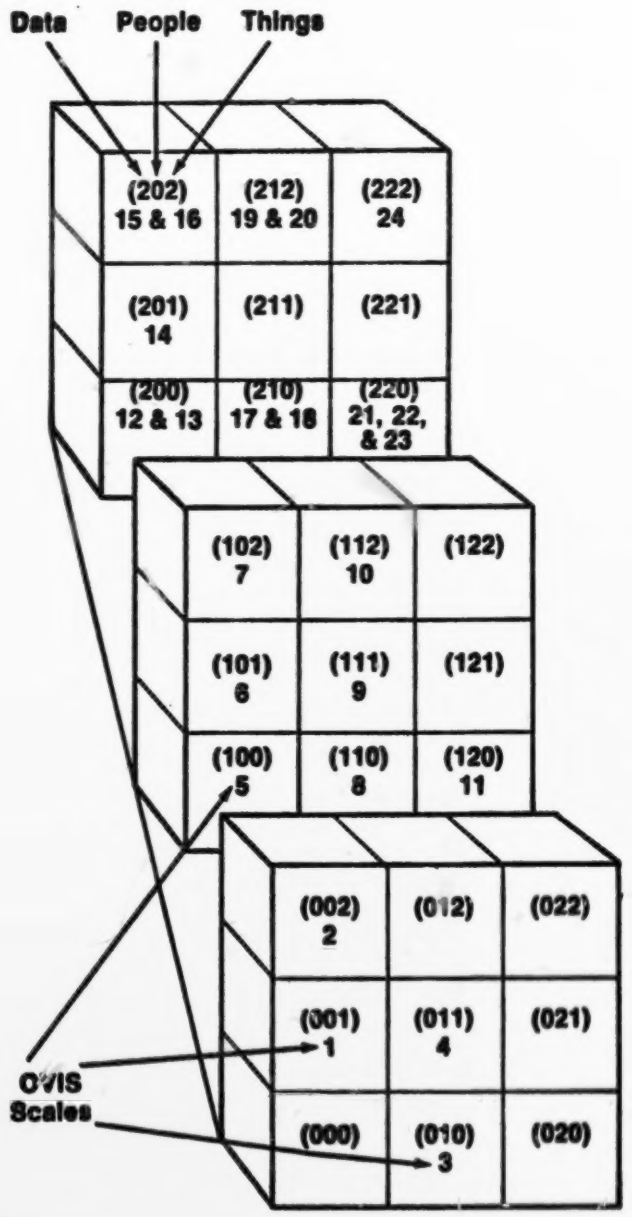


Figure 4



The three-digit number in parenthesis identifies the OVIS Data-People-Things rating assigned to each cell.

The numbers below a three-digit number identify OVIS scales assigned to the cell in question.

Some of the cells in the high data-level "slab" have been split into more than one OVIS scale because of the high density and lack of homogeneity of the clusters in these cells.

It must be remembered that the low data-level slab contains low-level jobs because all its cells have little or no data involvement. The middle slab contains technician-type jobs because it has average data involvement. The top slab contains professional jobs and has high data involvement. Note also that there is a relationship among OVIS scales 1, 6, and 14, i.e., Manual work, inspecting and testing, and appraisal. The people and things involvement are similar, but there is a progressive rise in data involvement. Similar relationships can be observed among scales 15, 19, and 24. In this case the differences are due to the increasing involvement with people.

The above model of vocational interests has been labelled the Cubistic Model of Vocational Interest (D'Costa and Winefordner, 1968) and is the basis for the development of the Ohio Vocational Interest Survey (D'Costa et. al., 1968).

Development of OVIS Items

OVIS items are brief statements of activities in the cluster of jobs representing an OVIS scale. The items are Likert-type and are responded to individually on a 5-point scale, ranging from "dislike very much" to "like very much". OVIS scales are therefore, "a priori" scales. However, they are also "homogeneous" scales in an empirical or statistical sense. Correlations were computed for each item with each of the 24 scale scores. The process of item development, which required 5 experimental forms of OVIS, made sure that each item in a particular scale correlated better than 0.55 with its own scale and correlated significantly higher with its own scale than the other 23 scales. OVIS scales are not independent, but by selecting items that did not correlate as highly with other scales, distinctness has been obtained.

Reliability and Validity Studies

These studies were conducted on OVIS. Reliability coefficients were computed for each of the 24 scales. Split-half correlation coefficients averaged 0.9 after correction for length of scale. Test-retest coefficients averaged 0.8 with a waiting period of about 15 days.

The validity of OVIS scales is based on "a priori" as well as "empirical" foundations. The items in OVIS scales are valid to the extent that the DOT is valid in terms of its job descriptions and functional analyses. This is generally considered to be logical or content validity. An earlier version of OVIS was also subjected to a validation study (D'Costa, 1968) in which

OVIS scores from a sample of some 350 "successful and satisfied" representatives (students) from six major vocational education groups (Agriculture, Home Economics, Health, Business and Office, Trade and Industrial, and Distributive Education) were subjected to multiple discriminant analysis. It was found that the six vocational education groups were significantly different in their OVIS scale scores and that discriminant functions derived from this study were significantly successful in classifying an independent sample of students. Furthermore, it was found that each vocational education group scored highest in OVIS scales that might logically be expected to relate to the group. Thus the Agriculture group scored highest in the Agriculture scale, the Trades and Industrial group scored highest in the Crafts scale, etc.

Construct validity studies have been initiated. Canonical correlations will be computed between the Kuder Preference Record scales and OVIS scales.

Norms

Norms were obtained for groups of students by sex on developmental versions of OVIS. Significant differences were noted for the sexes. For this reason, OVIS scales are scored slightly differently for males and females. A few items on certain scales are scored only for boys, whereas some other items are scored only for girls. However, most of the items are scored for both sexes.

Nationwide Standardization of Final Form of OVIS

Harcourt, Brace & World, Inc. will be conducting a nationwide standardization of the final version of OVIS early in 1969. Some 50,000 boys and girls in grades 8 through 12 from selected schools will be administered OVIS. These schools were selected on the basis of their geographic location, their size, and community employment characteristics. The data obtained will provide reliability, validity, and normative information. The States included in the standardization study are:

OVIS Reports and Their Use

The student profile reports:

a. scale interest scores which express the strength of the student's interests
b. percentile ranks and stanines which enable comparisons of the student's interest scores with those of students in the normative sample
c. scale clarity scores which show how consistent the student's responses are within each scale
d. the student's responses to the information items

The school system summaries report the numbers and percents of students choosing the various options on the questionnaire. These data will enable administrators to plan curriculum changes in the light of the actual interests expressed by students.

The OVIS manual describes in detail how a counselor might interpret OVIS reports to students. With some basic assistance, even in a group situation, a student is expected to use his OVIS report to obtain specific suggestions for vocational exploration using the list of typical jobs for each OVIS scale. The OVIS report attempts to bring together some of the major elements that a student needs to examine in order to devise plans for vocational exploration and to make vocational decisions.

The Ohio Vocational Interest Survey is based on the philosophy of self-direction by students. Counselors are expected to be catalysts of change and development, rather than directors. It attempts to facilitate vocational planning by providing realistic vocational exploration. It encourages the use of the information resources of the Department of Labor. OVIS is adaptable to a computerized system of vocational information based on the DOT and can be readily used in a computer-assisted system designed to teach decision-making and facilitate vocational exploration.

REFERENCES

Cooley, William W. "Vocational Interests". Paper read at American Educational Research Association Convention, 1967. (mimeograph)

D'Costa, Ayres G. "The Differentiation of High School Students in Vocational Education Areas by the Ohio Vocational Interest Survey." Unpublished Ph.D. thesis, Ohio University, Athens, Ohio. June 1968.

D'Costa, Ayres and David W. Winefordner. "A Cubistic Model of Vocational Interests." Paper read at American Educational Research Association Convention, 1968. (mimeograph)

D'Costa, Ayres and David W. Winefordner, John G. Odgers, and Paul B. Koons, Jr. The Ohio Vocational Interest Survey. Columbus, Ohio: The Ohio Department of Education, 1967.

Erickson, Erik H. Childhood and Society. New York: W. W. Norton & Co., 1964.

Ginzberg, Eli, Sol W. Ginzburg, Sidney Axelrad, and John L. Herma. Occupational Choice: An Approach to a General Theory. New York: Columbia University Press, 1951.

Hunt, J. McV. Intelligence and Experience. New York: The Ronald Press, 1961.

Super, D. E. "A Theory of Vocational Development," American Psychologist, 8: 185-190, May 1953.

Super, D. E., R. Starishevsky, N. Matlin, and J. P. Jordaan. Career Development: Self-Concept Theory. New York: College Entrance Examination Board, 1963.

Thorndike, E. L. "Intelligence and Its Measurement: A Symposium," Journal of Educational Psychology, 12: 124-127, 1921.

U.S. Department of Labor, Bureau of Employment Security. Counselors Handbook. Washington D.C.: U. S. Government Printing Press, 1967.

_____. Dictionary of Occupational Titles, Third Edition, Washington, D.C.: U. S. Government Printing Press, 1965.